



613-000333 Rev. E



## AT-CM70S Converteon Line Card Installation Guide

### Overview

The AT-CM70S line card is a 10/100 Mbps Ethernet copper-to-fiber media converter line card that provides Time Division Multiplexing (TDM) (T1/E1) transport in addition to regular Ethernet traffic and OAM link management capability. This line card offers support for 1.544 Mbps (T1) and 2.048 Mbps (E1) services with complete synchronization for toll-quality transport of voice, video, and data. It also accommodates traditional testing equipment currently used on SONET/SDH equipment for testing T1/E1 services. You can install the AT-CM70S line card in any Converteon Series chassis except the AT-CV1000. The AT-CM70S line card is hot swappable into and out of a Converteon chassis. The line card requires two adjacent line card slots.

### Related Documents

For details on the features and functions of a Converteon chassis, refer to the relevant documents on our web site, [www.alliedtelesis.com](http://www.alliedtelesis.com).

### Verifying Package Contents

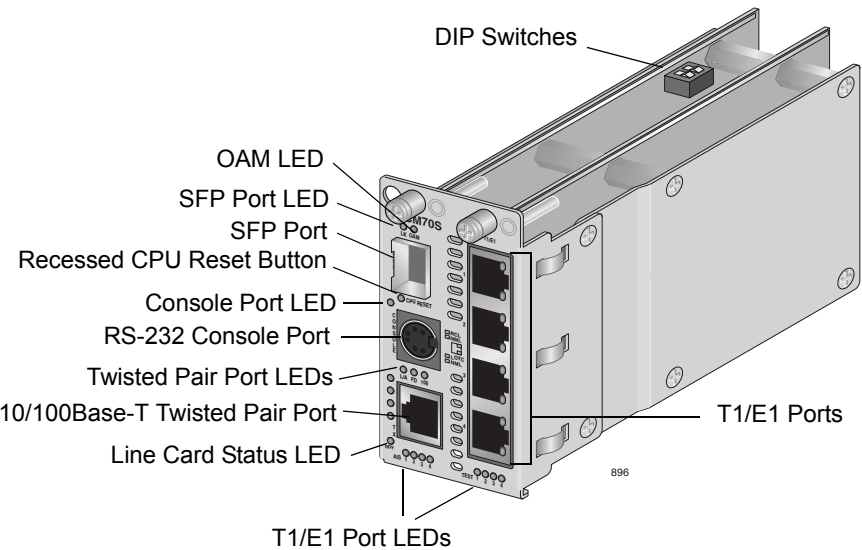
Ensure that the following items are included in your package:

- ❑ One AT-CM70S line card
- ❑ One console port cable
- ❑ This installation guide

If any item is missing or damaged, contact your Allied Telesis sales representative for assistance.

### AT-CM70S Line Card Components

An AT-CM70S line card has the components shown below.



### Port Descriptions

#### SFP Port

The SFP port supports an SFP transceiver with a fixed operating speed of 100 Mbps. The port multiplexes the T1/E1 and twisted pair ports into a single fiber interface for a distance of up to 40 km. Another AT-CM70S line card must be installed in the remote chassis to de-multiplex the signals.

#### Console Port

The console port allows you to configure the AT-CM70S line card when no AT-CV5M0x management card is installed.

#### Note

By default, the console port is active. However, if you configure the AT-CM70S line card using the management software, ensure that the operating mode is “Line Card DIP Switch” mode to keep the console port active. You cannot configure this setting using the DIP switches on the line card.

The default settings for the RS-232 console port are:

- ❑ Baud rate: 115200 bps (range 2400 to 115200 bps)
- ❑ Data bits: 8
- ❑ Parity: None
- ❑ Stop bits: 1
- ❑ Flow control: None

A console port cable is provided.

#### Twisted Pair Port

The 10/100Base-TX compliant twisted pair port has an RJ-45 connector and a maximum operating distance of 100 meters (328 feet). Category 5 (5E), 100 Ohm shielded or unshielded twisted pair cabling is required. The pinouts for this port are shown in “Twisted Pair Port Pinouts.”

#### T1/E1 Ports

Each T1 port supports a maximum rate of 1.544 Mbps and a maximum line length of 6000 ft. over 100 Ohm balanced cable. Each E1 port supports a maximum rate of 2.048 Mbps and a maximum line length of 2.5 km over 120 Ohm balanced twisted pair cable.

### LEDs

The AT-CM70S line card has three status LEDs, one LED for the SFP port, three LEDs for the twisted pair port, and four LEDs for each T1/E1 port as described in “LED Descriptions.”

### DIP Switches

One set of two DIP switches allow you to set the operating mode of the line card, as described in “DIP Switch Settings.”

### Recessed CPU Reset Button

The recessed CPU RESET button allows you to manually reset the AT-CM70S line card when the chassis does not contain an AT-CV5M0x management card or when an AT-CV5M0x management card is installed but you cannot reset the card through the management software.

### Installing an AT-CM70S Line Card

#### Note

Before you install an AT-CM70S line card, refer to the appropriate Converteon chassis installation guide for electrical safety and emissions information.



**Warning:** Remove all metal jewelry, such as rings and watches, before installing or removing a line card from a powered-on chassis.

**Caution:** Be sure to observe all standard electrostatic (ESD) precautions, such as wearing an antistatic wrist strap, to avoid damaging the device. A line card can be damaged by static electricity.

**Caution:** Before installing this line card in an AT-CV120x chassis, ensure that the chassis is grounded as described in the *AT-CV120x Chassis Installation Guide*.

#### Note

You can install this Converteon line card in any two adjacent Converteon chassis line card slots.

To install an AT-CM70S line card, perform the following procedure:

1. Remove the AT-CM70S line card from its shipping package and store the package in a safe place. You must use the original package if you need to return the unit to Allied Telesis.
2. Configure the line card’s DIP switches as required. Refer to “DIP Settings” for more information.
3. Select two adjacent line cards slot in the chassis where you want to install the AT-CM70S line card and remove the blank slot covers if they are installed.
4. Align the back edge of the line card with the top and bottom alignment guides located inside the slots.
5. Slide the line card into the slots until the front of the card is flush with the front of the chassis.

#### Note

Avoid touching the line card components.

6. Secure the AT-CM70S line card to the chassis by using a Phillips screwdriver to tighten the captive screw on the faceplate.

#### Note

Always tighten the captive screw to secure the line card to the chassis.

### LED Descriptions

#### Status LEDs

The line card has three status LEDs as described in the following table. For more information about OAM, refer to the relevant management software user’s guide.

LED	State	Description
RDY	Green	The line card has passed diagnostics.
	Off	The line card has not passed diagnostics.
OAM	Green	The OAM mode is enabled (visible or bypass). You use the DIP switches to set the OAM mode, as described in “DIP Switch Settings.”
	Off	The OAM mode is disabled.
Console	Green	The line card is being managed through the console port.
	Off	The line card is being managed through a management card.

#### SFP Port LED

The SFP port has one LED, as described in the following table.

LED	State	Description
LK	Green	A link has been established on the port.
	Off	No link has been established on the port.

Twisted Pair Port LEDs

The twisted pair port has three LEDs, as described in the following table. For more information about Smart MissingLink, refer to the relevant management software user’s guide..

LED	State	Description
L/A	Green	A link has been established on the port.
	Blinking Green	While in Smart MissingLink mode, a valid connection is established on the port while a link on the other port is lost.
	Off	No link has been established on the port.
FD	Green	The port is operating in full-duplex mode.
	Off	The port is operating in half-duplex mode.
100	Green	The port is operating at 100 Mbps.
	Off	The port is operating at 10 Mbps.

T1/E1 Port LEDs

Each T1/E1 port has four LEDs, as described in the following table.

LED	State	Description
RCL	Amber	Receive carrier loss occurred.
	Green	The port is operating normally.
LOTC	Amber	Loss of transmit clock occurred.
	Green	The port is operating normally.
AIS	Amber	Port received unframed all ones.
	Green	The port is operating normally.
TEST	Amber	Port synchronized to test stream.
	Green	The port is operating normally.

DIP Switch Settings

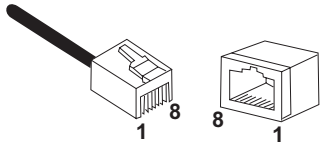
The DIP switches as described in the following table allow you to set the operating mode of the line card. For information about the operating modes as well as OAM, refer to the relevant management software user's guide.

Operating Mode	DIP 1	DIP 2
Link Test (non-OAM)	OFF	X
OAM Bypass	ON	OFF
OAM Visible	ON	ON
Manufacturing Default Settings	OFF	OFF

“X” means that the DIP switch position can be ON or OFF.

Twisted Pair Port Pinouts

The pinouts for the RJ-45 twisted pair port are shown in the following illustration.



The following table lists the RJ-45 pin signals when a twisted pair port is operating in the MDI or MDI-X mode.

MDI Mode		MDI-X Mode	
Pin	Signal	Pin	Signal
1	TX+	1	RX+
2	TX-	2	RX-
3	RX+	3	TX+
6	RX-	6	TX-

Warranty Information

The AT-CM70S line card has a limited warranty of five years. Go to [www.alliedtelesis.com/warranty](http://www.alliedtelesis.com/warranty) for the specific terms and conditions of the warranty and for warranty registration.

Specifications

Physical, Environmental, and Electrical Ratings

Dimensions (H x W x L)	(4.4 cm x 7.3 cm x 13.0 cm) 1.71 in. x 2.89 in. x 5.1 in.
Weight	0.54 kg (1.20 lbs.)
Operating Temperature	0° C to 40° C (32° F to 104° F)
Storage Temperature	-25° C to 70° C (-13° F to 158° F)
Operating Relative Humidity	5% to 90% (non-condensing)
Storage Relative Humidity	5% to 95% (non-condensing)
Operating Altitude Range	Up to 3,048 m (10,000 ft.)
Predicted MTBF (Telcordia SR332)	670,000 hours
Power Consumption	8.5 Watts

T1/E1 TDM Port Pin Signals

The pin signals for the T1/E1 TDM ports are listed in the following table.

Pin	Signal	Description
1	Receive Ring (RX, Ring-)	Input to AT-CM70S
2	Receive Tip (TX, Tip+)	Input to AT-CM70S
4	Transmit Ring (TX, Ring-)	Output from AT-CM70S
5	Transmit Tip (TX, Tip+)	Output from AT-CM70S

Electrical Safety and Emissions Statements

This product meets the following standards when installed in compliant host equipment.

U.S. Federal Communications Commission
Radiated Energy Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Note: Modifications or changes not expressly approved of by the manufacturer or the FCC, can void your right to operate this equipment.

Industry Canada
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Emissions FCC Class A, EN55022 Class A, VCCI Class A, C-TICK, CE

**Warning:** In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Immunity EN55024  
Electrical Safety UL60950 (cUL<sub>us</sub>), EN60950 (TUV), CSA22.2 No. 950

FCC Part 68 Customer Information

- This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the side plate of the chassis of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.
- The following are required when the customer orders service from the local telephone company:  
Universal Service Order Codes ("USOC") for the Equipment: RJ48C  
Facility Interface Code ("FIC"): 04DU9.1SN  
Service Order Code ("SOC"): 6.0N
- A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instructions for details.
- If this equipment, model AT-CM70S causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.
- The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.
- If trouble is experienced with this equipment model AT-CM70S, for repair or warranty information, please contact:  
**Allied Telesis Inc.**  
Technical Support  
19800 North Creek Parkway, Suite 200  
Bothell, WA 98011  
1-800-428-4835  
[www.alliedtelesis.com](http://www.alliedtelesis.com)  
If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.
- This product is not intended to be repaired by the customer (user).
- Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.
- If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this US: A5TDWNANAT-CM70S does not disable your alarm equipment. If you have question about what will disable alarm equipment, consult your telephone company or a qualified installer.

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